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|---|---|
| SINGH, DALZID E | |
| ART UNIT | PAPER NUMBER |
| 2633 | |

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/781,461 | LICHTMAN ET AL. | |
| | Examiner | Art Unit | |
| | Dalzid Singh | 2633 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *28 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,2,4-6,11-17,21,24-49,53-60,63 and 64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *53-60* is/are allowed.

6)☒ Claim(s) *1,2,4-6,11-17,21,24-49,63 and 64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Withdrawal of Advisory Action*

1. The advisory action mailed, 08 September 2005, is vacated. Rejections based on newly cited reference(s) follow.

### *Drawings*

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the elements of claims 30, 32 and 45 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2, 4-6, 11-14, 17 and 21, 36, 53 and 63 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, "multiplexing said plurality of in-use channels and said one or more blocked unused channels onto said optical network" Blocking the channel suggest that the channel does not pass to the multiplexer. Therefore, if one or more optical channels is blocked, it is unclear how the blocked one or more unused channels is multiplexed.

Claim 5 does not list the claim limitation. It is unclear what is claimed.

Claims 21, 36, 53 and 63 recite, "...each attenuator associated with an unused channel..." However, shown in figure 8, each attenuator is associated with each channel output of demultiplexer (114). Since the demultiplexer is operative to demultiplexed WDM signal into plurality of in-use channels and unused channel, therefore it is unclear which attenuator is associated with in-use channels and which is associated with unused channels.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 2, 4-6, 11-17, 21, 24-42, 44, 46-49, 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnold et al (US Patent No. 6,515,777).

Regarding claim 1 (as far as understood), Arnold et al disclose method of optical network termination for removing noise accumulation in an optical network, said method comprising the steps of:

demultiplexing an input optical signal into a plurality of channels, said plurality of input optical signals potentially corrupted with noise accumulation (Fig. 1 shows demultiplexer (8) to demultiplex the optical signals, since the optical signals have traveled through transmission line, therefore it would have been obvious that the optical signals is potentially corrupted with noise due to transmission line losses);

blocking said one or more channels so as to eliminate noise from infinitely circulating over channel through said optical network (as shown in Fig. 1, AGC (11) associated with each optical signal is controllable, therefore it would have been obvious that the optical channel can be blocked by adjusting AGC; see col. 3, lines 43-47); and

multiplexing said plurality of channels onto said optical network (multiplexer (13) multiplexes the optical signals).

Arnold et al disclose transmission of plurality of optical signals and differ from the claimed invention in that Arnold et al do not specifically disclose the plurality of optical signal comprises of in-use and un-use optical channels. However, it is well known in communication network system to design and provide in-use and un-use signal. Therefore, it would have been obvious to an artisan of ordinary skill in the art to provide optical network system comprising of in-use and un-use signals. One of ordinary skill in the art would have been motivated to do such in order to provide greater transmission capacity for future network or service expansion.

Regarding claim 2, as shown in Fig. 1, Arnold et al shows AGC (11) which blocks the optical signal by applying maximum attenuation level (maximum attenuation level is obtained by setting the AGC to minimum level; see col. 3, lines 43-47 and lines 66-67).

Regarding claims 4, 25 and 37, Arnold et al discloses optical amplifier causing ASE noise (see col. 1, lines 47-56).

Regarding claims 5 (as far as understood), 26 and 39, Arnold et al does not disclose any bit-rate conversion to convert the bit-rate of the signal, therefore the demultiplexing is operative to be transparent to a bit rate of each individual optical signal.

Regarding claims 6, 27 and 40, Arnold et al does not disclose any protocol conversion to convert protocol of the signal, therefore the demultiplexing is operative to be transparent to the protocol of each individual optical channel.

Regarding claims 11, 28 and 41, Arnold et al shows monitoring circuits (see Fig. 1, control circuit performs monitoring function).

Regarding claim 12, 29 and 42, Arnold et al discloses equalizer coupled to each optical channel between the multiplexer and demultiplexer to equalize optical gain of individual optical channel (see Fig. 1, AGC equalizes the gain).

Regarding claim 13, Arnold et al shows blocking each individual optical signal in accordance with control input (in Fig. 1, Arnold et al shows AGC control the optical signal via a control input shown by arrow).

Regarding claims 14, 31 and 44, Arnold et al discloses wavelength division multiplexing technique determined by optical demultiplexer (as shown in Fig. 1, Arnold et al shows multiplexer (13) and demultiplexer (8) which is a wavelength division multiplexing technique).

Regarding claims 17, 24 and 49, Arnold et al discloses of a ring network (see col. 1, lines 39-46).

Regarding claim 21, Arnold et al discloses WDM communication system, as shown in Fig. 1, comprising:

an optical demultiplexer (8) operative to demultiplex said WDM optical signal into a plurality channels, said plurality channels potentially corrupted with noise accumulation (Fig. 1 shows demultiplexer (8) to demultiplex the optical signals, since the optical signals have traveled through transmission line, therefore it would have been obvious that the optical signals is potentially corrupted with noise due to transmission line losses);

one or more optical attenuators (AGC), each attenuator is associated with the channel and operative to prevent noise from infinitely circulating over said channel, through said optical network (see col. 3, lines 29-67); and

an optical multiplexer (13) adapted to multiplex said plurality of channels and the output of said one or more optical attenuator to generate an output WDM optical signal therefrom with noise accumulation removed.

Arnold et al disclose transmission of plurality of optical signals and differ from the claimed invention in that Arnold et al do not specifically disclose the plurality of optical signal comprises of in-use and un-use optical channels. However, it is well known in communication network system to design and provide in-use and un-use signal. Therefore, it would have been obvious to an artisan of ordinary skill in the art to provide optical network system comprising of in-use and un-use signals. One of ordinary skill in the art would have been motivated to do such in order to provide greater transmission capacity for future network or service expansion.

Regarding claim 30, Arnold et al disclose the attenuation level of said optical attenuators is increased enough to effectively remove said channels thereby preventing the infinite circulation of noise in said optical network (maximum attenuation level is obtained by setting the AGC to minimum level; see col. 3, lines 43-47 and lines 66-67). As discussed above, it would have been obvious to an artisan of ordinary skill in the art to provide optical network system comprising of in-use and un-use signals. One of ordinary skill in the art would have been motivated to do such in order to provide greater transmission capacity for future network or service expansion.

Regarding claim 32, as shown in Fig. 1, Arnold et al show that the attenuator (AGC) is controlled and differ from the claimed invention in that Arnold et al do not specifically disclose that the attenuator is adapted to be controlled remotely. However, it would have been obvious to an artisan of ordinary skill in the art to provide the controller at remote location from the attenuator.

Regarding claims 33 and 46, Arnold et al discloses optical attenuator (AGC) placed in series with each optical channel between the multiplexer and demultiplexer to control power level of individual optical channel (see Fig. 1).

Regarding claims 34 and 47, Arnold et al discloses means for reducing cross talk placed in series with each optical channel (adjusting gain level of each optical signal reduces crosstalk).

Regarding claims 35 and 48, as shown in Fig. 1, Arnold et al discloses gain setting means (AGC) coupled in-line with each optical channel between the multiplexer and demultiplexer to set the gain of each channel.

Regarding claim 36, Arnold et al show an optical network, comprising:

a plurality of nodes, wherein wavelength division multiplexed WDM optical signals are communicated from node to node whereby channels circulate accumulated noise infinitely around said optical network (see col. 1, lines 39-59; it is well known that channels circulate accumulated noise infinitely around said optical network due to transmission loss);

an optical network terminator (switching node) for preventing infinite circulation and accumulation of noise within said optical network, wherein said optical network terminator comprises:

an optical demultiplexer (8) operative to demultiplex said WDM optical signal into a plurality of channels said plurality of channels potentially corrupted with noise accumulation (since the optical signals have traveled through transmission line, therefore it would have been obvious that the optical signals is potentially corrupted with noise due to transmission line losses);

one or more optical attenuator (AGC), each attenuator associated with channel and operative to prevent noise from infinitely circulating over said channels through said optical network (see col. 3, lines 29-67); and

an optical multiplexer (13) adapted to multiplex said plurality of channels and the output of said one or more optical attenuators to generate an output WDM optical signal therefrom with noise accumulation removed.

Arnold et al disclose transmission of plurality of optical signals and differ from the claimed invention in that Arnold et al do not specifically disclose the plurality of optical signal comprises of in-use and un-use optical channels. However, it is well known in communication network system to design and provide in-use and un-use signal. Therefore, it would have been obvious to an artisan of ordinary skill in the art to provide optical network system comprising of in-use and un-use signals. One of ordinary skill in the art would have been motivated to do such in order to provide greater transmission capacity for future network or service expansion.

Regarding claim 38, as shown in Fig. 1, Arnold et al shows that the demultiplexing generates said individual optical signals whereby the wavelength of each individual optical signal is fixed (the demultiplexer demultiplexes that optical signal into distinct fixed wavelength).

Regarding claim 63, Arnold et al disclose an optical ring network employing wave division multiplexing (WDM), comprising:

a plurality of nodes optically coupled to each other to form an optical ring (see col. 1, lines 39-46);

one or more optical amplifier located with said plurality of nodes, each optical amplifier causing amplifier spontaneous emissions noise to be injected and accumulated onto WDM optical signals transmitted from node to node in said optical ring (in col. 1, lines 39-46, Arnold et al disclose ASE and do not disclose that amplifier located with the nodes; however it would have been obvious to an artisan of ordinary skill in the art to provide amplifier at the nodes);

an optical terminator located between any two nodes an said optical ring, said optical terminator for preventing accumulated amplifier spontaneous emissions noise from circulating indefinitely around said optical ring (it would have been obvious to provide the node, as shown in Fig. 1, to be located anywhere within the ring network), said optical terminator comprising:

an optical demultiplexer (8) operative to demultiplex said WDM optical signal into a plurality of channels said plurality of channels potentially corrupted with noise accumulation (since the optical signals have traveled through transmission line,

therefore it would have been obvious that the optical signals is potentially corrupted with noise due to transmission line losses);

one or more optical attenuator (AGC), each attenuator associated with channel and operative to prevent noise from infinitely circulating over said channels through said optical network (see col. 3, lines 29-67); and

an optical multiplexer (13) adapted to multiplex said plurality of channels and the output of said one or more optical attenuators to generate an output WDM optical signal therefrom with noise accumulation removed.

Arnold et al disclose transmission of plurality of optical signals and differ from the claimed invention in that Arnold et al do not specifically disclose the plurality of optical signal comprises of in-use and un-use optical channels. However, it is well known in communication network system to design and provide in-use and un-use signal. Therefore, it would have been obvious to an artisan of ordinary skill in the art to provide optical network system comprising of in-use and un-use signals. One of ordinary skill in the art would have been motivated to do such in order to provide greater transmission capacity for future network or service expansion.

Regarding claim 64, as shown in Fig. 1, Arnold et al shows demultiplexer (8) separating each optical signal, the separation of the signal is determined by the demultiplexer.

7. Claims 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnold et al (US Patent No. 6,515,777) in view of Fevrier et al (US Patent No. 5,612,805).

Regarding claim 43, Arnold et al discloses WDM communication system as disclosed above comprising of multiplexer and demultiplexer and differs from the claimed invention in that Arnold et al does not show optical switch mechanism coupled to each optical channel between said optical demultiplexer and said optical multiplexer, wherein said optical switch mechanism adapted to enable and disable each individual optical channel in response to a corresponding control input. However, it is well known to provide switch between the demultiplexer and multiplexer. Fevrier et al is cited to show such well known concept. In Fig. 3, Fevrier et al show switch ($SW_1$) with a control input shown by arrow to the switch, to enable and disable each individual channel, for example, each channel can be pass or dropped, see col. 5, lines 62-67 to col. 6, lines 1-5. Therefore, it would have been obvious to an artisan of ordinary skill in the art to provide a switch as disclose by Fevrier et al to the WDM communication system of Arnold et al. One of ordinary skill in the art would have been motivated to do such in order to add or drop signal.

Regarding claim 45, in view of the above rejection , Fevrier et al show switch means adapted to virtually disconnect one or more optical fiber connecting said optical demultiplexer and optical multiplexer thus shutting off one or more optical channels (in Fig. 3, Fevrier et al show switch ($SW_1$) with a control input shown by arrow to the switch,

to shut off each individual channel, for example, each channel can be pass or dropped, see col. 5, lines 62-67 to col. 6, lines 1-5).

### *Allowance*

8. Claims 53-60 is allowable.

### *Response to Arguments*

9. Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimomura et al (US Patent No. 6,400,498) is cited to show optical signal repeating and amplifying device and optical level adjusting device.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DS
October 07, 2005

M. R. Sedighian
M. R. SEDIGHIAN
PRIMARY EXAMINER